



**Knight Piésold**

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YOUR REFERENCE DV1020012401

OUR REFERENCE C&C OF DENVER RESULTS

March 22, 2004

Ms. Cindy Bosco  
City and County of Denver  
201 West Colfax Avenue  
Department 1009  
Denver, Colorado 80202

**PUBLIC  
DOCUMENT**

Dear Ms. Bosco:

Thank you for allowing the EPA to collect samples from your property to investigate whether there is any significant environmental contamination remaining from the ARGO Smelter that existed near the I-25 and I-70 interchange prior to 1900. This letter provides you with a summary of the overall site-wide results and the specific results of the sampling conducted at your property in December 2003.

#### **Summary of Site-Wide Findings**

The EPA collected soil samples from borings at 36 different locations across the site. These locations are shown on Figure 1. Each boring went from the surface down to about 10-25 feet in depth. Each boring was divided into several depth intervals (e.g., 0-2 feet, 2-6 feet, etc.) before analysis for metals often associated with smelter sites (arsenic, cadmium, lead, copper, zinc, etc.). Of the 122 total soil samples analyzed, all but one was found to be below a level of concern for workers at the site. One sample (from a depth of 10-12 feet) had an elevated level of arsenic that would be of potential concern if a worker were exposed to it for many years. Because the sample is buried, no one is currently exposed, and the EPA considers it rather unlikely that anyone would be exposed in the future. Also, the spatial extent of the contamination appears to be limited. Thus, the EPA has concluded that there is no significant reason to be concerned over contamination in the soil.

The EPA also attempted to investigate whether groundwater at the site is contaminated. However, most of the borings (34 out of 36) drilled at the site did not encounter any water. At the two locations where near-surface groundwater was present, samples of the water were found to contain elevated levels of several metals at concentrations high enough to make the water unsafe to drink. However, this water is not currently used for drinking, and the EPA believes that it is not likely to be used in the future as a source of drinking water. Thus, the EPA believes that there is no reason at the present time for health concerns due to groundwater contamination.

#### **Summary of the Results from Your Property**

The results of the sampling from your property at one location are provided in the attached sheets. In brief, these results indicate that soil beneath your site is not contaminated at a level of

Ms. Cindy Bosco  
City and County of Denver

March 22, 2004

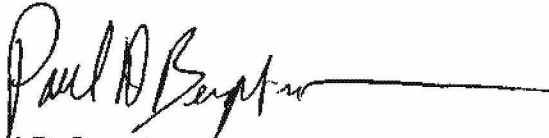
concern, and no groundwater was located on your property. Thus, the EPA does not believe that there is a reason for concern at your property.

**Next Steps at the Site**

Because metals in the water samples collected at the site were elevated, the EPA and the State believe it is important to collect additional data to determine if contaminated water might be migrating off the site to a location where humans could be exposed. For this reason, the EPA will be placing some temporary wells to monitor water (if any water is present) at the eastern edge of the site near I-25 and I-70. This activity will occur in early spring with the duration of sampling dependent on the results of the sampling and analysis.

If you have any questions regarding the sampling results for your property or about the EPA's plans to investigate further, please do not hesitate to contact me at 303-629-8788. Mr. Victor Ketellapper, EPA Project Manager, can be reached at 303-312-6578.

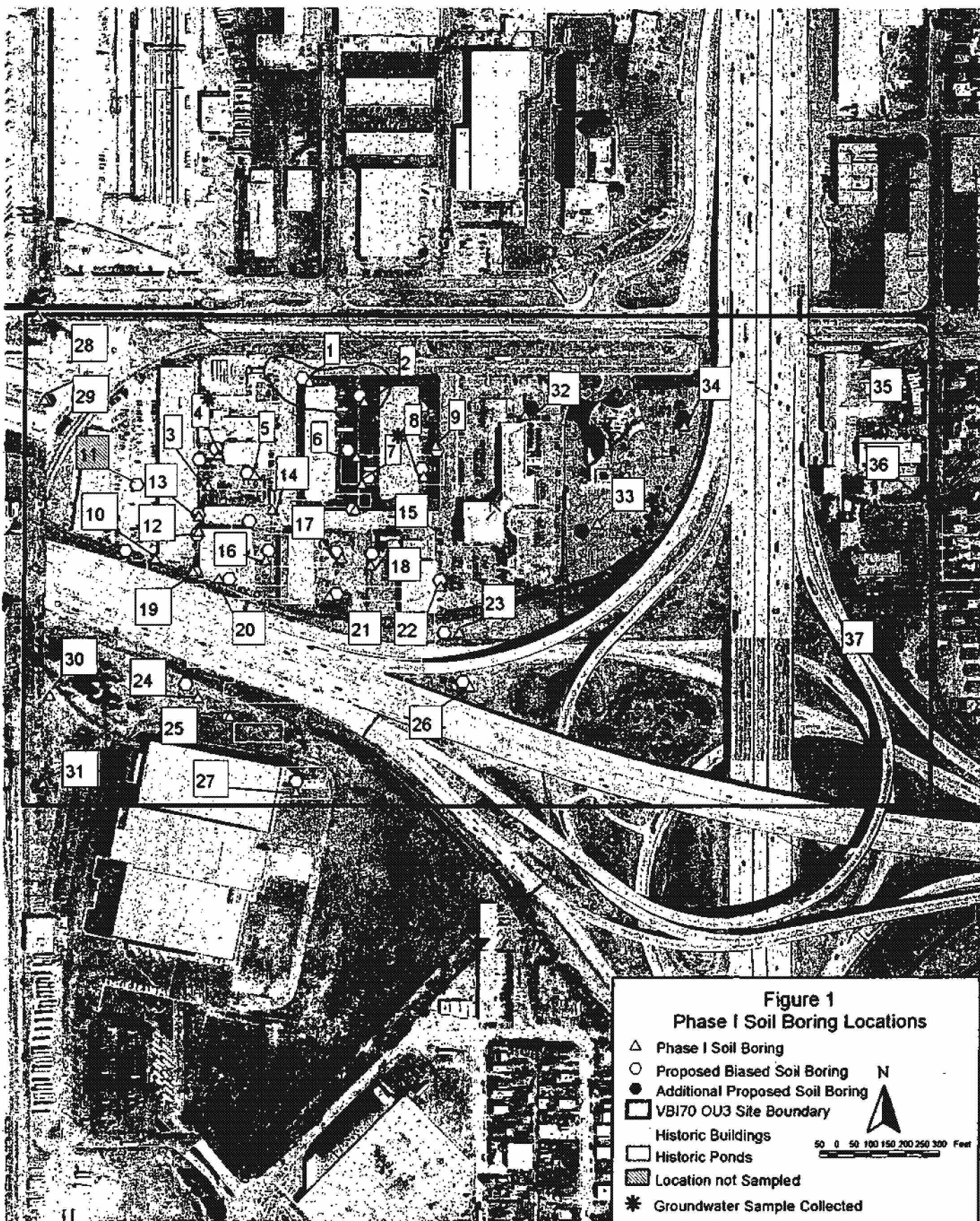
Sincerely,  
Knight Piesold and Co



Paul D. Bergstrom  
Project Manager

PDB:lkr  
Attachments

cc: Mr. Victor Ketellapper, EPA



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# SOIL BORING LOG

KUMAR & ASSOCIATES

Project Name: VB & I-70	Project No. 03-1-411	Boring No. 37	Sheet 1 of 1
Boring Location: SEE SITE PLAN	Start Date: 12/18/03	Completion Date: 12/18/03	
Driller: ZACK ENS	Rig Type: DIRECT PUSH	Ground Elev: 5169.93	NORTHING
Logged By: CAJ	Water Depth: Not Encountered	1709846.85	EASTING 3143935.42

Depth, feet	SOIL CORE					DESCRIPTION	CONTACT DEPTH	FIELD NOTES
	EXTENT	% RECOVERY	Laboratory Sample ID	PID Reading (ppm)	Graphic Log	U.S.C.S		
0			0037A					SAMPLE AT SURFACE
2	0-5	60				FILL		
4								
6			0037B			SP-GP	6'	SAMPLE AT 5'10"
8	5-10	90						
10			0037C			CS		SAMPLE AT 10'
12	10-14	90						
14								
16	14-15	300					15'	
18								
20								
22								
24								
26								
28								
30								
32								
34								
36								

KNIGHT PIRSOLD

Client Sample ID: 01-VBOU3-SB-0037-A

TOTAL Metals

Lot-Sample #...: D3L190464-006

Matrix.....: SOLID

Date Sampled...: 12/18/03 15:15 Date Received...: 12/19/03 16:35

% Moisture.....: 9.7

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 3356303						
Mercury	ND	0.033	mg/kg	SW846 7471A	12/31/03	F659K1AD
		Dilution Factor: 1				
Prep Batch #...: 3357647						
Silver	ND	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659K1AF
		Dilution Factor: 1				
Aluminum	17000	10	mg/kg	SW846 6010B	12/30-01/05/04	F659K1AG
		Dilution Factor: 1				
Arsenic	6.1	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659K1AH
		Dilution Factor: 1				
Barium	160	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659K1AJ
		Dilution Factor: 1				
Beryllium	0.90	0.50	mg/kg	SW846 6010B	12/30-01/04/04	F659K1AK
		Dilution Factor: 1				
Calcium	4400	20	mg/kg	SW846 6010B	12/30-01/05/04	F659K1AL
		Dilution Factor: 1				
Cadmium	2.7	0.50	mg/kg	SW846 6010B	12/30-01/04/04	F659K1AM
		Dilution Factor: 1				
Cobalt	6.8	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659K1AN
		Dilution Factor: 1				
Chromium	13	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659K1AP
		Dilution Factor: 1				
Copper	23	2.0	mg/kg	SW846 6010B	12/30-01/04/04	F659K1AQ
		Dilution Factor: 1				
Iron	18000	10	mg/kg	SW846 6010B	12/30-01/05/04	F659K1AR
		Dilution Factor: 1				
Potassium	2600	300	mg/kg	SW846 6010B	12/30-01/05/04	F659K1AT
		Dilution Factor: 1				

(Continued on next page)

**FORM 1**  
Equivalent



**KNIGHT PIRSOLD**

Client Sample ID: 01-VBOU3-SB-0037-A

**TOTAL Metals**

Lot-Sample #...: D3L190464-006

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Magnesium	3300	20	mg/kg	SW846 6010B	12/30-01/05/04	P659K1AU
		Dilution Factor: 1				
Manganese	410	1.0	mg/kg	SW846 6010B	12/30-01/05/04	P659K1AV
		Dilution Factor: 1				
Sodium	ND	500	mg/kg	SW846 6010B	12/30-01/05/04	P659K1AW
		Dilution Factor: 1				
Nickel	9.2	4.0	mg/kg	SW846 6010B	12/30-01/04/04	P659K1AX
		Dilution Factor: 1				
Lead	30	0.80	mg/kg	SW846 6010B	12/30-01/04/04	P659K1AO
		Dilution Factor: 1				
Antimony	ND	1.0	mg/kg	SW846 6010B	12/30-01/04/04	P659K1A1
		Dilution Factor: 1				
Selenium	ND	1.3	mg/kg	SW846 6010B	12/30-01/04/04	P659K1A2
		Dilution Factor: 1				
Thallium	ND	1.2	mg/kg	SW846 6010B	12/30-01/04/04	P659K1A3
		Dilution Factor: 1				
Vanadium	31	2.0	mg/kg	SW846 6010B	12/30-01/04/04	P659K1AA
		Dilution Factor: 1				
Zinc	130	2.0	mg/kg	SW846 6010B	12/30-01/05/04	P659K1AC
		Dilution Factor: 1				

**FORM 1**  
Equivalent

KNIGHT PIESOLD

Client Sample ID: 01-VBOU3-SB-0037-B

TOTAL Metals

Lot-Sample #...: D3L190464-007

Matrix.....: SOLID

Date Sampled...: 12/18/03 15:20 Date Received...: 12/19/03 16:35

% Moisture.....: 16

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 3356303						
Mercury	0.10	0.033	mg/kg	SW846 7471A	12/31/03	F659L1AD
		Dilution Factor: 1				
Prep Batch #...: 3357647						
Silver	ND	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AF
		Dilution Factor: 1				
Aluminum	23000	10	mg/kg	SW846 6010B	12/30-01/05/04	F659L1AG
		Dilution Factor: 1				
Arsenic	2.6	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AH
		Dilution Factor: 1				
Barium	56	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AJ
		Dilution Factor: 1				
Beryllium	0.86	0.50	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AK
		Dilution Factor: 1				
Calcium	9800	20	mg/kg	SW846 6010B	12/30-01/05/04	F659L1AL
		Dilution Factor: 1				
Cadmium	0.59	0.50	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AM
		Dilution Factor: 1				
Cobalt	6.0	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AN
		Dilution Factor: 1				
Chromium	18	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AP
		Dilution Factor: 1				
Copper	21	2.0	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AQ
		Dilution Factor: 1				
Iron	18000	10	mg/kg	SW846 6010B	12/30-01/05/04	F659L1AR
		Dilution Factor: 1				
Potassium	2200	300	mg/kg	SW846 6010B	12/30-01/05/04	F659L1AT
		Dilution Factor: 1				

(Continued on next page)

**FORM 1**  
Equivalent

**KNIGHT PIRSOLD**

Client Sample ID: 01-VBOU3-SB-0037-B

**TOTAL Metals**

Lot-Sample #....: D3L190464-007

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Magnesium	4400	20	mg/kg	SW846 6010B	12/30-01/05/04	F659L1AU
		Dilution Factor: 1				
Manganese	150	1.0	mg/kg	SW846 6010B	12/30-01/05/04	F659L1AV
		Dilution Factor: 1				
Sodium	960	500	mg/kg	SW846 6010B	12/30-01/05/04	F659L1AW
		Dilution Factor: 1				
Nickel	16	4.0	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AX
		Dilution Factor: 1				
Lead	16	0.80	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AO
		Dilution Factor: 1				
Antimony	ND	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659L1A1
		Dilution Factor: 1				
Selenium	ND	1.3	mg/kg	SW846 6010B	12/30-01/04/04	F659L1A2
		Dilution Factor: 1				
Thallium	ND	1.2	mg/kg	SW846 6010B	12/30-01/04/04	F659L1A3
		Dilution Factor: 1				
Vanadium	34	2.0	mg/kg	SW846 6010B	12/30-01/04/04	F659L1AA
		Dilution Factor: 1				
Zinc	100	2.0	mg/kg	SW846 6010B	12/30-01/05/04	F659L1AC
		Dilution Factor: 1				

**FORM 1**  
Equivalent



**KNIGHT PIESOLD**

Client Sample ID: 01-VBOU3-SB-0037-C

**TOTAL Metals**

Lot-Sample #...: D3L190464-008

Matrix.....: SOLID

Date Sampled...: 12/18/03 15:25 Date Received...: 12/19/03 16:35

% Moisture.....: 16

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 3356303						
Mercury	ND	0.033	mg/kg	SW846 7471A	12/31/03	F659M1AD
		Dilution Factor: 1				
Prep Batch #...: 3357647						
Silver	ND	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AF
		Dilution Factor: 1				
Aluminum	22000	10	mg/kg	SW846 6010B	12/30-01/05/04	F659M1AG
		Dilution Factor: 1				
Arsenic	2.9	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AH
		Dilution Factor: 1				
Barium	19	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AJ
		Dilution Factor: 1				
Beryllium	0.53	0.50	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AK
		Dilution Factor: 1				
Calcium	14000	20	mg/kg	SW846 6010B	12/30-01/05/04	F659M1AL
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AM
		Dilution Factor: 1				
Cobalt	4.6	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AN
		Dilution Factor: 1				
Chromium	10	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AP
		Dilution Factor: 1				
Copper	4.3	2.0	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AQ
		Dilution Factor: 1				
Iron	15000	10	mg/kg	SW846 6010B	12/30-01/05/04	F659M1AR
		Dilution Factor: 1				
Potassium	910	300	mg/kg	SW846 6010B	12/30-01/05/04	F659M1AT
		Dilution Factor: 1				

(Continued on next page)

**FORM 1**  
Equivalent

**KNIGHT PIESOLD**

Client Sample ID: 01-VB003-SB-0037-C

**TOTAL Metals**

Lot-Sample #....: D3L190464-008

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>WORK</u> <u>ORDER #</u>
Magnesium	2600	20	mg/kg	SW846 6010B	12/30-01/05/04	F659M1AU
		Dilution Factor: 1				
Manganese	160	1.0	mg/kg	SW846 6010B	12/30-01/05/04	F659M1AV
		Dilution Factor: 1				
Sodium	720	500	mg/kg	SW846 6010B	12/30-01/05/04	F659M1AW
		Dilution Factor: 1				
Nickel	7.0	4.0	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AX
		Dilution Factor: 1				
Lead	12	0.80	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AO
		Dilution Factor: 1				
Antimony	ND	1.0	mg/kg	SW846 6010B	12/30-01/04/04	F659M1A1
		Dilution Factor: 1				
Selenium	ND	1.3	mg/kg	SW846 6010B	12/30-01/04/04	F659M1A2
		Dilution Factor: 1				
Thallium	ND	1.2	mg/kg	SW846 6010B	12/30-01/04/04	F659M1A3
		Dilution Factor: 1				
Vanadium	24	2.0	mg/kg	SW846 6010B	12/30-01/04/04	F659M1AA
		Dilution Factor: 1				
Zinc	41	2.0	mg/kg	SW846 6010B	12/30-01/05/04	F659M1AC
		Dilution Factor: 1				

**FORM 1**  
Equivalent